

1. INTRODUCTION

ARCADIS U.S., Inc. (ARCADIS) has prepared this Contingency Plan on behalf of Lockheed Martin Corporation (Lockheed Martin) in response to the Immediate Action letter from the United States Environmental Protection Agency (USEPA) dated July 20, 2012. Lockheed Martin owns and ARCADIS operates waste management units including two closed landfills (referenced as the RCRA and CERCLA landfills), a Scrubber Sludge Pond Area, and a leachate collection and storage and conveyance system associated with both the RCRA and CERCLA landfills. These waste management units are administered by a State of Oregon Post Closure Care Permit (ORD 052 221 025) at the former Martin Marietta Reduction Facility (MMRF) in The Dalles, Oregon. The MMRF site is located near the west bank of the Columbia River and, during aluminum production, occupied approximately 350 acres within an 800-acre area zoned for heavy industry and manufacturing. The former aluminum plant has been demolished and the property of the former plant is currently undeveloped.

The Lockheed Martin facility is located within the physical boundary of the former Northwest Aluminum (NWA) plant, except where Lockheed property is directly adjacent to River Road. The NWA plant address is:

3313 West Second St.

The Dalles, Oregon 97058

Two commercial enterprises, Specialty Aluminum Products, and Tenneson Engineering are located adjacent to the NWA facility (**Figure 1**). There is one NWA employee that works in the building adjacent to the Tenneson Engineering building. The NWA facility is bounded by railroad tracks to the west, with commercial/industrial properties located between the railroad tracks and Interstate I-84. The NWA facility is bounded by River Road to the east, with an industrial park located between River Road and the Columbia River. The property to the north of the NWA facility is currently undeveloped and bounded by River Road. The property to the south of the NWA facility is comprised of currently undeveloped property, with the City of The Dalles rodeo grounds located within approximately 200 feet of the southeast corner of the

Scrubber Sludge Pond fenced enclosure. The Norcor Juvenile Detention Facility is located approximately 3,000 feet south of the CERCLA landfill perimeter.

All waste management units are secured at the site. Each landfill, the CERCLA tank and Scrubber Sludge Pond area are secured by cyclone fencing with three strands of barbwire and locked gates. LMC and ARCADIS have unrestricted access to the site through a gate along River Road in the CERCLA landfill fence. ARCADIS personnel are onsite for inspections and monitoring, and as such are primarily present at the CERCLA utility building or the RCRA and CERCLA landfills. The NWA facility is fenced and access is generally controlled. The procedure for obtaining access to the site in case of an emergency is to follow the call procedure detailed in Table 2. **Figure 1** depicts the layout of the site in relation to the surrounding area.

1.1 Current Site Activities

This contingency plan, which follows an outline and standard format developed by ARCADIS, describes the actions that will be taken in the event of system failure or upset to help ensure compliance and mitigate the risks of unacceptable consequences.

In addition, the USEPA has recently expressed concern that:

- Toxic, asphyxiating and explosive gases at the site have been reported that approach or exceed levels deemed immediately dangerous to life or health (IDLH) and/or the lower explosive limit (LEL), and
- The site is located in an area that may be subject to wildfire.

Notifications regarding restricting site access have been made to the People's Utility District (PUD), and to the Bonneville Power Administration (BPA). Lockheed Martin and ARCADIS have also prepared and submitted contact information to the Fire Chief of the Mid-Columbia Fire and Rescue, Robert Palmer, who has historically been notified when contact information or conditions at the site have changed.

Risks associated with local wildfires at the site are limited to grass fires at the RCRA and CERCLA landfills and grass/tree fires at the Scrubber Sludge Ponds. Due to the crushed rock surfaces at both the RCRA and CERCLA landfills, grass cover is limited, and fire control/suppression can be limited to the perimeters of the landfills as potential grass fires would quickly deplete the available fuel. Due to the potential presence of ignitable gasses in vents or manholes at the landfills, perimeter control of potential fires will be most protective for local response personnel. The vegetative cover at the Scrubber Sludge Ponds is much heavier due to the presence of grass and trees, primarily Russian olives, and this area could therefore require a heavier response in regard to fire control. Given the dense nature of the cover in this area, perimeter fire control is recommended for this area as well. No explosive gasses are noted to be present at the Scrubber Sludge Pond, and would therefore not present an explosive concern to response personnel. As the vents at the RCRA landfill are designed to collect and vent potential gas production from the landfill, these vents have been fitted with lightning rods to minimize the potential for fires and/or explosions that could occur from a lightning strike. A discussion of potential risks associated with the presence of explosive gases detected at the RCRA and CERCLA landfills is located in Section 2.3.

The nature of the risks and potential injuries posed by the waste materials could include the following dermal and/or inhalation risks from the following compounds:

- HCN, H₂S, CO₂, methane and phosphine are toxic, asphyxiating and potentially explosive in gaseous phase. The presence of these gases at the Site at levels at or above their respective IDLH and/or LEL limits constitutes a potential threat to human health and/or the environment. Workers are present at the Site within several hundred feet of the RCRA and CERCLA landfills, scrubber sludge ponds and leachate collection systems and are potentially at risk from these gases.
- CO₂ is a powerful cerebral vasodilator and inhaling large concentrations affects the lungs, skin and cardiovascular system and causes rapid circulatory insufficiency leading to coma and death. Lower levels of CO₂ can cause headache, dizziness, disorientation, nausea and fatigue. Releases of CO₂, especially in a confined or unventilated area, can

lower the concentration of oxygen to a level that is immediately dangerous to life and health. A level of CO₂ at or above 40,000 ppm is immediately dangerous to life and health.

- Cyanide is a highly reactive toxic compound which forms lethal HCN gas particularly under confined and acidic conditions. HCN is an extremely toxic gas and can be absorbed through the skin. Releases of this gas may produce oxygen deficient atmospheres and individuals in such atmospheres can be asphyxiated. HCN is a protoplasmic poison, rendering oxygen unavailable to tissues and causing death by chemical asphyxiation. Exposure to low concentrations can cause headache, nausea, dizziness, difficulty breathing, and vomiting. A level of HCN at or above 50 ppm is immediately dangerous to life and health.
- H₂S is a highly flammable gas and gas/air mixtures can be explosive. The gas may travel to sources of ignition and flash back. If ignited, the gas burns to produce toxic vapors. High concentrations of H₂S can cause shock, convulsions, inability to breathe, unconsciousness, coma and death. Effects can occur within a few breaths and even with a single breath. At low to moderate concentrations, severe eye and respiratory irritation, including accumulation of fluid in the lungs, headache, dizziness, nausea and vomiting can occur. A level of H₂S at or above 100ppm is immediately dangerous to life and health.
- Phosphine is a colorless, toxic gas and is extremely flammable and explosive. Phosphine may ignite spontaneously on contact with air. Phosphine is a respiratory irritant and attacks the cardiovascular and respiratory systems leading to cardiac arrest, peripheral vascular collapse and pulmonary edema. Most deaths occur within the first 12 to 24 hours after exposure and are cardiovascular in origin. Exposure occurs primarily through inhalation but dermal exposure can cause systemic effects. Phosphine is a central nervous system depressant and effects of minor exposure include headache, dizziness, and trembling of extremities while greater exposures lead to seizures and coma. Gastrointestinal symptoms are usually the first symptoms to occur after exposure and include nausea, and vomiting. Phosphine is heavier than air and may cause asphyxiation

in enclosed, poorly ventilated, or low lying areas. Phosphine is immediately dangerous to life and health at levels of 50 ppm.

- Methane is an explosive, flammable and colorless gas that can reduce the amount of oxygen in the air. Methane is lighter than air when both are at the same temperature. Exposure to an oxygen-deficient atmosphere (less than 19.5% oxygen) may produce dizziness, nausea, vomiting, loss of consciousness and death. At levels of less than 12% oxygen unconsciousness and death can occur without warning. Methane presents multiple atmospheric hazards. With a 10% displacement of the atmosphere, methane can explode violently. With a 90% displacement, methane can asphyxiate an unprotected worker within 5 minutes.

Further health effect information regarding these compounds can be found through the following link: <http://www.cdc.gov/niosh/docs/2005-149/pdfs/2005-149.pdf>

TABLE 1. Notifications Made Regarding Restricted Access			Date of Last Communication
Bonneville Power Administration (BPA) FRED WALASAVAGE	fwalasavage@bpa.gov	A high voltage BPA transmission line easement that transects the permit area. Occasional service to transmission line poles and other power line infrastructure is required	07-26-12
People's Utility District (PUD) DARLENE WAY	Northern Wasco County People's Utility District 2345 River Road The Dalles, OR 97058.3551 Office: 541.296.2226 Darlene-Way@nwasco.com	PUD has access to the site to record power usage and to maintain infrastructure associated with delivery of power services to the Site.	07-25-12
Mid-Columbia Fire and Rescue ROBERT PALMER	Mid-Columbia Fire and Rescue Physical Address 1400 W 8th ST The Dalles, OR Mailing Address 1400 W 8th ST The Dalles, OR Telephone: 541-296-9445 Fax: 541-296-8656 For emergencies, always call 911 http://www.mcfr.org	Notification of local emergency providers including the hospital and fire department has always been required under the Post Closure Care Permit. Reporting requirements have changed from an annual requirement to notification when contact information changes. Fire Chief Robert Palmer has been notified when contact information or conditions at the site have changed.	07-27-12

1.2 Implementation of the Contingency Plan

This contingency plan addresses the solid waste management units referenced in Section 1, i.e., the RCRA and CERCLA landfills, the Scrubber Sludge Ponds, and the leachate collection and storage system associated with each landfill. The RCRA landfill consists of K088 waste, and past monitoring has shown the presence of methane, hydrogen sulfide, hydrogen cyanide gasses within the landfill vent system. The CERCLA landfill contains K088 waste, as well as other wastes including construction debris, off specification cryolite, anode waste, waste

metal and scrubber sludge pond material. K088 wastes are listed as hazardous wastes due to high concentrations of cyanide that is present in this material. The CERCLA leachate collection system includes a 300,000 gallon collection tank with secondary containment provided by a lined containment pond. The Scrubber Sludge Ponds were formerly used as waste water holding ponds, and the primary waste associated with the ponds are poly-aromatic hydrocarbons (PAHs). The scrubber sludge ponds have an engineered protective soil cover.

The contingency plan shall be implemented in the case of an unplanned, sudden or non-sudden release of hazardous waste constituents. Based on the character of the hazardous waste constituents and the type of containment structures at the facility, the most likely unplanned release of hazardous waste would be a release of leachate from the leachate-collection/detection system. Leachate is collected from both the RCRA landfill and CERCLA landfill, and is stored at a 300,000 gallon leachate collection tank located adjacent to the CERCLA landfills. There is a discharge protocol contained in the RCRA permit requiring WAD cyanide concentrations in the treated leachate of 0.1 mg/L. Based on the design and operating procedures associated with the leachate collection system, the most likely release mechanisms are considered to be:

- A release of treated leachate while discharging leachate from the 300,000 gallon storage tank to the NPDES outfall located at the Columbia River. A release of leachate could occur if the transfer pipeline is compromised prior or during transfer. The standard operating procedure is to receive approval to discharge treated leachate once the storage tanks approaches half of its capacity, therefore in a worst case scenario up to 150,000 gallons of leachate could be discharged at a point between the leachate storage tank and the discharge point at the Columbia River.
- A release of leachate from a failure of the 300,000 storage tank. In this case the release would be contained in the adjacent lined containment pond.
- A release of leachate during the transfer of leachate from the RCRA landfill to the leachate storage tank. Although leachate generation is currently minimal, potentially

up to 500 gallons of leachate could be discharged to the ground surface during transfer from the RCRA utility building to the storage tank.

Response activities in the event of a release of leachate as detailed above are covered in Section 2.1 of this plan.

Contact to stored wastes in the landfills is limited by the landfill caps and associated perimeter fencing. Previous characterization of the materials located within the RCRA and CERCLA landfills confirms that the components of cathode waste have the potential to react to form explosive, asphyxiating, and/or toxic gases at the site. The most likely release point would be the existing vents located at the RCRA landfill as previous monitoring at the vents have shown landfill generated gases to be present in these vents. Currently access to these vents is controlled/limited by the perimeter fence located at the RCRA landfill. Additionally, the presence of the landfill caps limits the contact of water with the cathode waste, which minimizes the potential for development of explosive gases.

K088 / cathode wastes do have the potential to burn if ignited, with subsequent generation of explosive, asphyxiating, and/or toxic gases. In case of a fire at the RCRA or CERCLA landfills no actions should be taken which would compromise the integrity of these caps during response actions. In the case of fire response, the construction of the rip rap cover will suffice to prevent contact of water to waste material, but water should not be directed in force that would erode the rock cover.

Evacuation procedures for onsite personnel in the case of an emergency are detailed in Section 3.0.

2. EMERGENCY RESPONSE PROCEDURES

In the event of an emergency, the primary emergency coordinator/site manager (Table 2) will be notified immediately. Any other personnel on the site shall be warned of the type of emergency as will the local authorities. The National Response Center will be contacted if the emergency involves a reportable quantity spill or release or a hazardous substance.

2.1 Notification

ARCADIS has a trained environmental coordinator, currently Dan Shaver, who is on site several times per week to inspect site conditions per the approved inspection plan, monitor the condition of the landfill covers, and maintain the leachate collection system. The description and responsibilities for this job include assessing whether site conditions exist that could potentially threaten the environment and/or human health. Dan is a resident of The Dalles and is locally available to notify the state and local agencies of any potential emergency conditions existing at the site.

ARCADIS currently has a secondary emergency coordinator, Connie Cole, onsite through September 23rd in the event the primary emergency coordinator is not available.

The responsibilities of the local environmental coordinator include the following notification requirements, divided among notification requirements that pertain to the LMC/ARCADIS team or to 911 to notify local fire/police/emergency personnel.

LMC/ARCADIS Notifications:

- Any damage/failure of existing fencing at the solid waste management units.
- Any determination that trespassing has occurred at the site.
- Any deficiencies/damage noted to facilities or the leachate collection system during routine inspections.

- Leachate level of the leachate collection tank during routine inspection. In the absence of the local environmental coordinator, ARCADIS will mobilize site personnel to monitor leachate levels in the tank based upon rate of generation to insure that the tank will not exceed half of its storage capacity prior to approved discharge.
- Leachate level of the RCRA landfill collection sump during routine inspection.
- Release of leachate in a volume that is able to be controlled, collected and stabilized with no potential to impact local drainages or come in contact with nearby site workers or public.

Emergency Response (911) Notifications:

- Any fire and or explosion at the site.
- Any release of leachate that requires additional help to control or has the potential to enter drainages or go offsite.
- Any release/detection of potentially explosive, asphyxiating and/or toxic gases in ambient air (i.e., outside of the RCRA landfill vents or CERCLA landfill manholes).
- Any release that meets Oregon state notification requirements.

TABLE 2. Emergency Information Telephone Numbers		
Emergency Coordinator/Site Manager DAN SHAVER-Priority contact 1.	ARCADIS 3313 West Second St. The Dalles, OR 97058	Cell: (541) 908-8053
Alternate Emergency Coordinator/Project Manager CONNIE COLE – Priority contact 2. LYNDEN PETERS-Priority contact 3.	ARCADIS Onsite September 12, 2012 through September 23, 2012. 8725 Rosehill, Ste. 350 Lenexa, KS 66215	Cell: (406) 431-4931 Office. (913) 492-0900 ext. 12 cell (913) 963-3360
Lockheed Martin Representative BILL BATH	Lockheed Martin Corporation <u>Mailing Address:</u> Project Manager Lockheed Martin CEESH 2950 North Hollywood Way Suite 125 Burbank, CA 91505 <u>Shipping Address:</u> Lockheed Martin Corporation 12999 Deer Creek Canyon Road, MS: DC5684 Littleton, CO 80127	Office. (720) 842-6106 Cell: (303) 229-7063
VP - Northwest Aluminum Specialty Metals JIM SHAVER	Northwest Aluminum Specialty Metals 2929 West 2 nd Street The Dalles Oregon, 97058	Office-541-298-0876 Cell: (541) 993-5714
Senior Permit Writer FREDRICK MOORE	Oregon Department of Environmental Quality Eastern Region Solid and Hazardous Waste Programs 475 NE Bellevue Dr. Ste. 110 Bend, OR 97701	(541)633-201122
Primary Contact: FIRE, POLICE, OR AMBULANCE – 911		
National Response Center 1-800-424-8802		

The Post-Closure Care (RCRA) Permit in effect for the Site contains specific requirements for immediate reporting. This includes notification of the ODEQ site manager of information concerning release of any hazardous waste that may cause an endangerment to public drinking water supplies as well as any information of a release or discharge of hazardous waste, or of a fire or explosion from the hazardous waste landfill which could threaten the environment or human health outside the facility. Additional specific notification requirements are located in Oregon regulations (OAR 340-105-0030) and federal regulations (40 CFR 270.30(l)(6)).

ARCADIS' project manager will identify all persons involved with the plan (i.e., contacts, agency personnel, etc.), inform those persons of the existence of the plan and its objectives, and describe why each of those persons is named in the plan. As contacts are changed, the contractor project manager is responsible for updating the new contacts. A copy of the contingency file is on file with the Mid-Columbia Fire and Rescue. This agency will respond to all fire emergencies, emergency medical or hazardous materials incidents, or any other emergency situations that may occur.

2.2 Spill response

- The primary potential for spills at the site is associated with the leachate collection system associated with the RCRA and CERCLA landfills. In regard to potential spills, the following potential scenarios and associated response actions have been identified based on system knowledge and past practice: In accordance with the approved Batch Discharge Protocol contained in the RCRA permit, leachate is sampled prior to discharge to verify discharge compliance levels of WAD cyanide (0.1 mg/L) are present in the treated leachate. Upon ODEQ approval, discharge of treated leachate from the 300,000 gallon storage tank occurs when approximately 150,000 gallons has accumulated in the tank. The potential for a spill of treated leachate occurs during the discharge process. Site personnel monitor the discharge from the leachate collection tank to the discharge at the Columbia River. At any point during the discharge procedure, if a spill is noted the site personnel terminate the discharge process at the storage tank. In a worst case

scenario up to 150,000 gallons of treated leachate could be discharged to the ground surface if site personnel were incapacitated for some reason. The primary emergency coordinator in the case of spill will follow standard procedure to control potential spills through instrumentation (i.e., shutting off valves at the storage tank). Upon assessing the spill, the emergency coordinator will request the assistance of the state and local agencies listed in Table 2 if the volume of discharge is beyond the capacity of the emergency coordinator to address. A spill in this scenario can occur at any location between the leachate collection tank and the discharge point at the Columbia River. The majority of this route is above ground, and is located adjacent to natural drainages that feed to the Columbia River.

- The potential exists for failure of the leachate collection storage tank. This scenario has a maximum release volume potential of 300,000 gallons. The lined containment pond located adjacent to the storage tank has the capacity to contain a spill in excess of 300,000 gallons. The tank is designed in case of valve failure to drain to the lined containment pond. In case of structural tank failure the contents of the tank would drain to the containment pond. In this case the emergence coordinator will contact approved subcontractors to collect and store the released leachate until proper disposal can be arranged.
- In the case of transfer of leachate from the RCRA landfill to the leachate collection tank, up to 500 gallons of leachate could be released to the ground surface in case of a tank failure and/or spill. A spill in this amount would likely soak into the ground before spreading to any nearby drainage features. However the emergence coordinator in this case will be prepared to make efforts to limit overland migration of any spill.

Spill response equipment that is kept at the CERCLA utility building at the site includes:

TABLE 3. Emergency Equipment List

Equipment	Location	Use
Shovel	Leachate transfer building	To assist in construction of berm/dike in event of discharge.
Bucket	Leachate transfer building	To collect and transfer small spills.
Splash-resistant suit	Leachate transfer building	To protect personnel from waste exposure.
First-aid kit	Leachate transfer building	To be used as an immediate measure to remedy injuries to personnel. Follow-up checkup is recommended.
Portable sump pump	Leachate transfer building	Used to pump leachate.
Boots	Leachate transfer building	To be worn during emergency operations.
Gloves	Leachate transfer building	To be worn during emergency operations.
Dust masks	Leachate transfer building	To be worn during emergency operations.

2.3 Fire Response

In case of a fire at the site, the emergency coordinator will notify the response agencies listed in Table 2. As noted in Section 1, based on the contents of the RCRA and CERCLA landfills, the primary concern in case of a fire would be that the integrity of the existing landfill caps not be compromised. Additionally, the presence of fire at the RCRA and/or CERCLA landfill has the potential to cause an explosion due to the presence of explosive gases at the landfill. Response personnel in this case will have a copy of this contingency plan, and the emergency coordinator will coordinate with response personnel. As part of the contingency plan briefing, coordination

with local response personnel will determine the appropriate distances that response personnel will keep from the RCRA and CERCLA landfill perimeters in case of fire.

2.4 Gas Release Response

The potential for gas release exists at both the RCRA and CERCLA landfills, and could be comprised of gases that are explosive, asphyxiating and/or toxic. In addition to response actions detailed in Section 2.3 (Fire Response), this contingency plan will be updated as appropriate based on results of current gas sampling and analysis activities that are taking place at the RCRA and CERCLA landfills that will better define the conditions under which potential gases may be generated and be released from either landfill.

3.0 Evacuation

In the event of an incident, facility personnel must exit the facility gate to the nearest public access point. If the incident may affect the public, the environmental coordinator will notify any personnel present at Specialty Aluminum Products and Tenneson Engineering, as well as requesting the support of local authorities to determine if further notifications are needed based on conditions.

If site personnel require medical attention, the nearest hospital is Mid-Columbia Medical Center, 1825 East 19th Street, #3, The Dalles, OR, (541) 298-3771. Total distance from the RCRA Landfill to the hospital is approximately 3.7 miles. Driving directions are as follows:

- Depart 3313 W 2nd St (RCRA Landfill) on W 2nd Street (South-East) for 2.0 miles
- Continue (East) on US-30 [Mosier the Dalles Hwy] for 0.7 mile
- Turn RIGHT (South) onto Brewery [Brewery Grade] for 0.3 mile
- Bear LEFT (East) onto E 9th Street for 0.1 mile

- Turn RIGHT (South) onto Oregon Street [Oregon Ave] for 0.6 mile
- Turn RIGHT (West) onto E 19th Street for 120 yards
- Arrive at 1825 E 19th Street, Mid-Columbia Medical Center

Driving directions and a map are included in Figure 2.

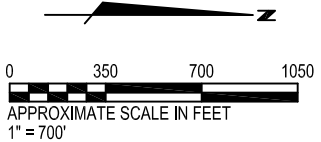
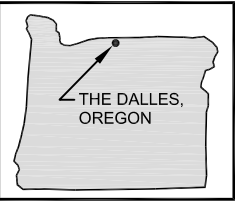


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LEGEND

- MW-41S CERCLA LANDFILL MONITORING WELL LOCATION
- MW-37S RCRA LANDFILL MONITORING WELL LOCATION
- LOCKHEED MARTIN CORPORATION OWNERSHIP



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Technical Review	M. RISHER / KW SMITH



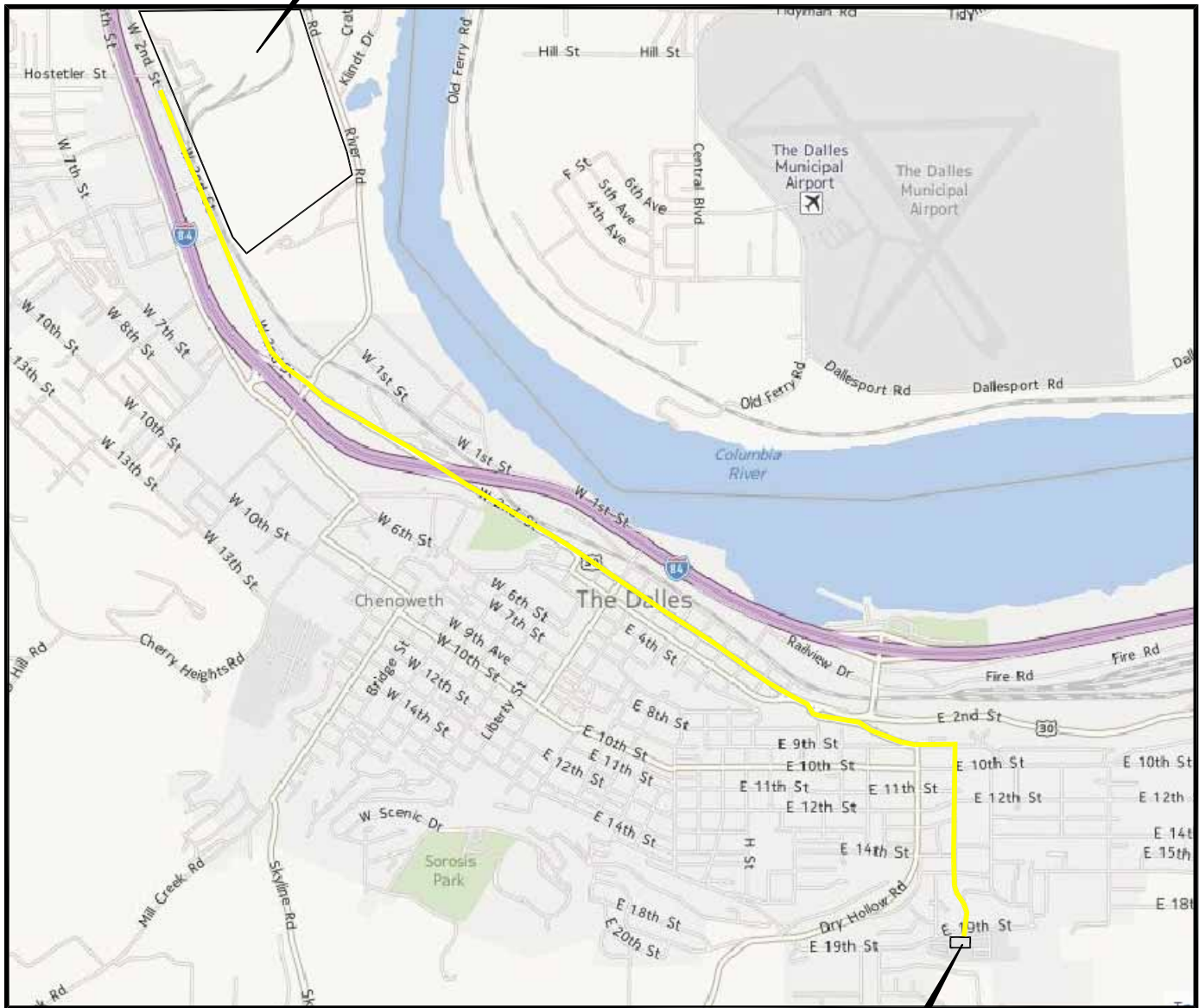
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LOCKHEED MARTIN CORPORATION
SITE LAYOUT - FACILITIES AND PROJECT AREAS

LOCKHEED MARTIN CORPORATION SITE
THE DALLES, OREGON

Project Number	GP000677.2012
Drawing Date	12/03/10
Figure	1

LOCKHEED MARTIN CORPORATION SITE




MID-COLUMBIA
MEDICAL CENTER



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	Project Manager K.W. SMITH			Drawing Date 12/03/10
	Task Manager M. RISHER			Figure 2
	Technical Review M. RISHER / KW SMITH			